SOIL CONSERVATION SERVICE

STANDARD AND SPECIFICATIONS

CHANNEL VEGETATION (Acre)

STANDARD

Definition

Establishing and maintaining adequate plants on channel banks, berms, spoil and associated areas.

Purpose

To stabilize channel banks and adjacent areas for temporary and/or permanent protection and reduce erosion and sedimentation. To maintain or enhance the equality of the environment, including visual aspects and fish and wildlife habitat.

Scope

This standard applies to the vegetation of open channels, streams, or ditches. It applies to Floodwater Diversions (400), Floodways (404), Open Channels (582), Stream Channel Stabilization (584), Streambank Protection (580), and Surface Drainage, Main or Lateral (607-B). It does not apply to Diversions (362), Grassed Waterways or Outlets (412) or Surface Drainage, Field Ditches (607-A).

Conditions Where Practice Applies

On channel banks, berms, spoil, and associated areas; except grassed waterways, diversions, and areas with protective linings, those covered with water for an extended period, or in areas where conditions will not support adequate vegetation.

SPECIFICATIONS

I. Soil Material

The soil material shall contain enough topsoil and organic matter to support vegetation. Any toxic material should be covered with two feet of adequate soil material.

II. Side Slopes

Side slopes shall be no steeper than two horizontal to one vertical In urban and recreation areas, side slopes of 3:1 will provide for public safety and enhancement of visual resources. Side slopes no steeper than 4:1 shall be constructed where area is to be mowed by a tractor.

III. Seedbed Preparation

Prepare seedbed by disturbing top 4 to 6 inches of soil material with suitable equipment, if needed. Remove stones and debris and fill rills and gullies. Extra preparation is needed in those areas which are to be mowed and where visual enhancement is desired.

IV. Fertilizer and Soil Amendments

Fertilizer and soil amendments, including limestone, shall be applied according to soil test. If soil test results are not available, apply 4,000 lbs. of agricultural grade limestone and fertilize at 40-80-80 per acre. Soil amendments shall be worked into the top 4 to 6 inches of soil where possible.

V. Species Selection

See the species listed in the current Agronomy Guide under "Seed Mixtures for Permanent Cover for Conservation Plantings" for the appropriate structure to be vegetated. Shrubs such as willow may be better suited in some situations. Rooted or unrooted cuttings or seedlings are stagger spaced 2' X 2' from water line to top of bank on streambanks. Special purpose plantings may be used outside the channel for wildlife, recreation, or enhancement of visual resources.

VI. Planting

Firm seedbed, if possible, before planting and install any needed water control measures such as temporary diversions. Seed may be broadcast, drilled, or hydroseeded. Legumes shall be inoculated prior to seeding. Sprigging or sodding may also be used in special situations where a fast cover is needed. Best planting dates are March 15 to May 15 and September 1 to October 15. Where summer seedings are used, adequate mulch must be applied and supplemental water should be available. No seedings between October 15 and March 1 are permitted due to potential damage from high flows on bare earth. Construction work must be timed to avoid this situation. If possible, firm the seedbed again after seeding and mulching. Areas accessible to livestock shall be fenced until vegetation is established. Temporary fences are permitted for this purpose.

Hydroseeding

Hydroseeding is a method in which the lime fertilizer, grass seeds, legume seeds, and inoculate are mixed with water as a slurry, and applied generally at a rate of 1,000 gallons per acre. Up to 4,000 lbs. of agricultural grade limestone may be mixed with 1,000 gallons of water in a hydroseeder and applied per acre. If more than 4,000 lbs. of lime are required per acre, the excess over 4,000 lbs. may be applied by a truck spreader, lime spreader, hydroseeder, or airblast spreader.

Fertilize at the rate of 40-80-80 per acre. When hydroseeding legumes and fertilizer together the legume inoculant should be added just before application since some fertilizers are harmful to rhizobia. Use four times the rate of inoculant recommended on the package.

VIII. Mulching

All channel vegetation--Whether seeded with a drill, broadcast, or hydroseeded--should be mulched to reduce erosion and to aid seed germination and establishment of the seedlings. Grass hay and cereal straw are preferred mulches and should be applied to produce a layer 1 to 1.5 inches deep. Generally, 2.5 to 3 tons per acre are sufficient.

As a guideline, a thickness of 5 or 6 overlapping straws or hay stems provides acceptable mulching. Straw or hay should not be chopped or finely broken during application. On steep slopes, hay rather than straw mulch is recommended. CAUTION--Grass hay may introduce undesireable weeds.

Long straws and stems are more readily anchored in place and provide more protection to the seedling plants than chopped straw or hay. Mulches of hay or straw can be tied down with commercial netting of various types or with asphalt emulsion or cutback asphalt at a rate of 150 gallons per acre. Cellulose fiber mulch at a rate of 750 lbs. per acre provides an excellent way to tack or hold straw or
hay mulch in place. Spray the cellulose fiber on top of the straw or hay mulch. When cellulose fiber is used alone as mulch, use 1,500 lbs. per acre. Other mulches and mulch anchoring materials may be used. See Standard and Specifications for Mulching (484). Caution should be observed in using woodchips because they may hinder or prevent emergence of small grass and legume seedlings.

IX. Special Considerations

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A. Channel banks on outside curves of streams may need adequately placed deflectors to protect bank from damage during high flows. These are only to be installed with proper engineering assistance and under the guidance of a Pennsylvania Fish Commission representative.

B. Channel vegetation along streambanks from normal water level to top of banks should not be used where side slopes are greater than 2:1 and/or vegetation velocities are exceeded. (See Engineering Field Manual pages 7-14.)

C. Provisions for safety and protection of human life and property in all aspects of design application and maintenance must be taken.

D. Rare, endangered or threatened species and State or nationally recognized natural vegetated areas will be identified and protected, where applicable.

E. Undercut and/or leaning trees shall be cut on the unexcavated side when construction is done on one side of the streambank. The stumps should not be removed in most cases. The unexcavated side should be overseeded or planted with woody or herbaceous vegetation.

F. Healthy woody vegetation not leaning or undercut should not be removed along streambanks as it will continue to stabilize the bank and maintain water temperature for the fishery.

G. All State and National laws, rules and regulations shall be followed when working on streambanks.

X. Maintenance

Channel vegetation can only be maintained by proper and timely maintenance. Control grazing to maintain the desired cover. Special care is needed to maintain vegetation near outlets, inlets, and other appurtenances. Washouts must be repaired as soon as possible. Sod should be mowed, if possible, and soil amendments applied, as needed.